Comments Regarding Draft Guidance for Certification 15, Subpart E U-NII 6 GHz devices operating in the 5.925-7.125 GHz band

Publication: 987594

U-NII 6 GHz devices 5.925-7.125 GHz DR90817-4549045 7

September 24, 2020

Guidance is being sought regarding device certification in the Federal Communications Commission's (FCC, the Commission) August 14, 2020 Draft for Review of U-NII 6 GHz devices operating in the 5.925-7.125 GHz band. We commend the Commission for initiating discussion of these important issues. Although we recognize the need for creating clear and effective guidance for the certification of new 6 GHz wireless devices, we question the timing of the Knowledge Data Base (KDB) and appropriateness of splitting approval guidance into two phases. The split allows more immediate submissions for approval of new low power indoor (LPI) access points, subordinates and indoor clients in Phase 1 while guidance for standard power access points and clients under control of a standard power access point will be issued in Phase 2 after the Automated Frequency Coordination (AFC) specifications are finalized.

In its REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING for unlicensed use of the 6 GHz Band,[1] the Commission left developing detailed technical requirements in some key areas to the industry. In order to protect the incumbent users, the FCC set some general operational and power guidelines and restrictions but did not establish complete rules for the protection of incumbents. The Report and Order focused on three methods for protection of incumbents:

1. establishing an effective AFC for the control of standard-power access points (undefined);
2. defining appropriate power limits; and
3. requiring non-AFC controlled devices to utilize a contention-based protocol (undefined).

The contention-based protocol is noted by the FCC as a central mechanism for protecting incumbents no less than 30 times in the R&O and FNPRM. Since LPI devices are not required to be coordinated via the proposed AFC, the FCC notes that the contention-based protocol is a *primary* method to ensure protection for incumbents and ensure efficient and cooperative shared use of the spectrum[2]. In addition to protection of incumbents, the commission calls for the contention-based protocol to provide equal

[1] Federal Communications Commission Report and Order, *Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz* (Report and Order). 35 FCC Rcd 3852 (5).

[2] *Id., at para 99, 101, 102, 120, 141, 154, 168, 221, 231.*

access to the spectrum for unlicensed devices, prevent devices from transmitting at extremely high duty cycles (limit duty cycle), detect the presence of ultra-wideband and wideband devices and ensure the spectrum is not in use prior to transmitting and do not transmit continuously. It has not been determined that a particular method such as energy above a threshold is sufficient to meet these goals.

The Commission called for the creation of a multi-stakeholder group (MSG) with the expectation that this group would define the mechanisms for ensuring incumbent protection while allowing efficient sharing of the 6 GHz spectrum with new known and yet to be known unlicensed devices[3]. While the proceeding has focused primarily on unlicensed Wi-Fi, the rules provide for a wide range of technologies to operate, some of which will not conform to the IEEE Std. 802.11 or Wi-Fi specifications. Without more detailed performance requirements for the contention-based protocol, not only is protection of licensed users uncertain, but effective sharing among unlicensed users is also in doubt.

Stated requirements of the MSG include more than just the testing and implementation of protocols and security for AFC. The FCC calls for the MSG to address issues concerning both standard-power operations and indoor low-power operations in the 6 GHz band as well as encouraging the multi-stakeholder group to address any issues it deems appropriate.

Assigning the responsibility for detection and mitigation to the MSG represents a substantial change to incumbent protection. Currently, unlicensed operations are subject to 47 U.S.C. § 301, 47 C.F.R. §15.5 which states that "The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected."

We recognize that the use of a multi-stakeholder group has been effective in some portions of the spectrum, (e.g., in the recent CBRS proceeding). We fully support and are actively participating in this important work. We also recognize that this important work is just beginning. It is clear that the methods for protecting incumbents from interference, and the methods for detection, identification, notification and cessation of interference, were not defined in the R&O/FNPRM and are instead part of the key responsibilities of the multi-stakeholder group. These are complex problems requiring non-trivial solutions. Successful sharing between incumbents and unlicensed devices depends upon building confidence, trust, and mutual understanding of the problems and effective solutions. Defining a conformance method for the content-based protocol requirement without establishing the technical characteristics of that protocol which meets the goals set forth by the commission does not build the required trust.

As indicated by their Phase 2 approach, clearly the FCC understands the need to have well-defined AFC requirements specified prior to issuing conformance guidance. We differ with the Commission's apparent assumption that the requirements or the contention-based protocol required for low power indoor devices is sufficiently defined. The KDB defines a simple energy detection requirement which has not been shown to meet the goals stated by the commission for the contention-based protocol. We

[3] Id., *at paras. 174-180.*

believe considerable work is required (including empirical testing) to define an effective contention-based protocol that achieves the goals stated by the Commission.

The MSG has not yet begun the work to define, test and validate a contention-based protocol or the mechanism for incumbents to detect, identify, notify, and stop interference. Thus, proceeding with Phase 1 for LPI devices is premature. The Commission stated in the R&O that the establishment of an effective contention-based protocol is required by for LPI devices to operate. Guidance to be used for submitting applications for equipment authorization under the Pre-Approval Guidance (PAG) Procedure[4] should only happen once the MSG, who has been tasked with determining appropriate operating requirements, has submitted approved methods. The required methods include tested and confirmed AFC for standard-power access points, the use of a contention-based protocol for devices not subject to AFC, and appropriate interference detection and mitigation approaches.

It is clear that the correct methods for a contention-based protocol are not yet defined or validated, yet are central to effective use of the band.[5] It is also clear that the responsibility for defining, testing and confirming for the incumbents that the correct interference mitigation and remedies are in place has been assigned to the MSG. The Commission must hold publication of LPI device approval guidelines until the necessary work has been completed.

[4] *See* FCC Publication 388624, Published August 28, 2020.
[5] *FCC Report and Order,* at para. 237.